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CONTENTS

Part 1. *January* 1954.

	PAGE
Editorial	1
Mr. B. SCHIFF. A Calculation of the Eigenvalues of Electronic States in Metallic Lithium by the Cellular Method	2
Dr. N. H. MARCH. Momentum Distribution of Electrons in Solids: Results for some Metals using the Thomas–Fermi Method	9
Mr. L. S. KOTHARI. Riesz Potential and the Elimination of Divergences from Quantum Electrodynamics: I	17
Dr. B. L. MOISEIWITSCH. On the Electron Affinities of Atomic Fluorine, Oxygen and Lithium	25
Dr. M. R. SCHAFROTH. Self-Consistent Spin-Wave Theory for the Ferromagnetic Exchange Problem	33
Dr. L. A. RADICATI. Isotopic Spin and Coulomb Forces: II—Excited States of Light Nuclei	39
Mr. N. K. BRIDGE and Dr. H. G. HOWELL. The Absorption Spectrum of Bismuth Oxide	44
Dr. S. RAIMES. Correlation Energy in Metals and the Cohesive Energy of Metallic Sodium	52
Mr. A. H. DE BORDE. The Auger Effect and Negative Meson Capture	57
Dr. R. F. BARROW and Dr. A. D. CAUNT. The Ultra-Violet Spectrum of a Diatomic Hydride Excited in Hydrogen–Potassium Fluoride Hollow-Cathode Discharges	68
Mr. R. WOLFE. On the Theory of Optical Absorption in Metals and Semiconductors	74
Mr. W. MARSHALL. Inelastic Magnetic Scattering of Neutrons from a Ferromagnetic Crystal	85
Letters to the Editor:	
Mr. G. Z. SHAH, Mr. N. J. PATEL and Dr. K. M. GATHA. Scattering of High Energy Nucleons and Electrons by Carbon	92
Mr. P. G. DODSWORTH and Dr. R. F. BARROW. Triplet Electronic States of Aluminium Monofluoride	94
Mr. S. J. Q. ROBINSON and Dr. R. F. BARROW. The E–X Band System of SiS in Emission and the Dissociation Energy of SiS	95
Reviews of Books	97
Contents of Section B	100

Part 2. *February* 1954.

Dr. J. G. RUTHERGLEN, Dr. P. J. GRANT, Dr. F. C. FLACK and Mr. W. M. DEUCHARS. γ-Radiation from the Reaction $^{27}Al(p, \gamma)^{28}Si$	101
Mr. J. S. TURNER. Investigation of Triplet Neutron–Proton Scattering in the Low Energy Region using the Eckart and Bargmann Potentials	111
Dr. G. N. FOWLER. Electron–Neutrino Angular Correlation Functions in the Theory of Beta Decay	117
Dr. J. M. CASSELS and Mr. J. D. LAWSON. Absorption Cross Sections for 134 MEV Protons	125
Prof. S. DEVONS, Dr. G. GOLDRING and Dr. G. R. LINDSEY. Emission of Electron–Positron Pairs from Light Nuclei—I: Monopole Transition in ^{16}O	134
Mr. R. H. TREDGOLD. A Modified Form of Heisenberg's Theory of Ferromagnetism	148
Dr. G. HARRIES. A Cloud Chamber Study of Internal Pairs from $^{12}C^*$	153
Mr. B. A. CHARTRES and Prof. H. MESSEL. Three Dimensional Theory of Electron–Photon Showers	158

17086

PAGE

Mr. A. M. Lane and Dr. L. A. Radicati. Studies in Intermediate Coupling—II : Radiative Transitions in Light Nuclei 167
Lady Anne Pery. Isotope Shifts in the Atomic Spectrum of Calcium . . 181
Research Notes :
Dr. R. F. Barrow, Dr. G. Drummond and Dr. S. Walker. A Note on the Ultra-Violet Band Spectra of CCl and SiCl 186
Mr. D. T. Stewart, Mr. P. W. F. Gribbon and Prof. K. G. Emeléus. Excitation Conditions for the Infra-Red Auroral Bands of Ionized Nitrogen 188
Dr. P. J. Jutsum. The Continuous Absorption of Light in Calcium Vapour . 190
Letters to the Editor :
Dr. E. Finlay-Freundlich. Red-Shifts in the Spectra of Celestial Bodies . 192
Dr. Max Born. On the Interpretation of Freundlich's Red-Shift Formula . 193
Dr. P. G. Klemens. The Thermal Conductivity of Monovalent Metals . 194
Mr. G. V. Marr. A Note on the Absorption of Light by Indium Vapour . 196
Corrigendum (Rutherglen, Grant, Flack and Deuchars) 197
Reviews of Books 198
Contents of Section B 200

Part 3. *March* 1954.

Mr. L. S. Kothari. Riesz Potential and the Elimination of Divergences from Quantum Electrodynamics : II 201
Dr. J. S. van Wieringen. Justification of the Use of Perturbation Theory in Metallic Conductivity 206
Prof. H. Jones and Mr. B. Schiff. Nuclear Magnetic Resonance in Metallic Lithium and Sodium 217
Mr. R. H. Tredgold. On the Exchange Interaction in the Collective Electron Approximation 221
Dr. W. B. Bonnor. Static Magnetic Fields in General Relativity 225
Mr. H. N. V. Temperley. The Mayer Theory of Condensation Tested Against a Simple Model of the Imperfect Gas 233
Dr. M. E. Rose. Spherical Tensors in Physics 239
Dr. G. L. Squires. The Scattering of Slow Neutrons by Ferromagnetic Crystals 248
Dr. J. R. Prescott. The Decay of ^{203}Pb and the Energy Levels of ^{203}Tl . . 254
The late Dr. W. D. Brodie. Lens Spectrometer Study of the Disintegration of $MsTh_2$ 265
Dr. G. Abraham. Absolute Magnitudes of (d, p) Scattering Cross Sections . 273
Research Notes :
Dr. E. H. S. Burhop. The De-Excitation of Helium Metastable Atoms in Helium 276
Dr. D. E. Alburger and Dr. M. A. Grace. The Disintegration of Cobalt 57 280
Dr. P. F. D. Shaw and Dr. J. R. Prescott. A Search for ^{205}Pb. . . . 283
Mr. H. S. Murdoch and Mr. A. J. Webb. Isomerism in ^{46}Ti 286
Dr. N. H. March. On Momentum Distribution in Nuclei 288
Dr. R. E. B. Makinson. The Thermal Conductivity of Metals 290
Dr. L. F. H. Bovey and Mr. W. R. S. Garton. The Absorption Spectrum of Lutetium 291
Letters to the Editor :
Dr. J. H. Crawford, Jr., and Dr. D. K. Holmes. A Chemical Approach to the Treatment of Electronic Spin in Semiconductors 294
Dr. E. W. Elcock. Collective Electron Antiferromagnetism 295
Dr. J. K. Basson and Mr. J. Steyn. Absolute Alpha Standardization with Liquid Scintillators 297
Reviews of Books 299
Contents of Section B 304

Part 4. *April* 1954.

PAGE

Dr. B. DONOVAN. The Magneto-Resistance Effect in Metals at High Frequencies . 305
Dr. D. C. BISSET and Dr. J. IBALL. X-Ray Diffraction from Built-up Multilayers Consisting of only a few Monolayers 315
Dr. A. C. CLARK. The Binding Energy of the Alpha Particle 323
Dr. S. K. GHOSH, the late Dr. G. M. D. B. JONES and Prof. J. G. WILSON. Ionization by Relativistic μ-Mesons in Oxygen 331
Dr. A. DALGARNO and Dr. G. POOTS. Approximate Molecular Orbitals: I—The $1s\sigma_g$ and $2p\sigma_u$ States of H_2^+ 343
Dr. S. DATTA MAJUMDAR. Energy Levels of Triatomic Molecules 351
Dr. R. F. BARROW, Mr. G. DRUMMOND and Mr. P. B. ZEEMAN. Rotational Analysis of the β Band System of the NS Molecule 365
Research Notes:
Mr. R. A. BALLINGER and Dr. N. H. MARCH. Extended Thomas–Fermi Methods 378
Dr. E. W. LEE. The Approach to Saturation Magnetostriction 381
Dr. P. J. PRICE. Perturbation Theory for the One-Dimensional Wave Equation 383
Dr. J. HATTON and Dr. B. V. ROLLIN. The Electrical Properties of Indium Antimonide at Low Temperatures. 385
Mr. N. G. MCCRUM and Mr. C. A. SHIFFMAN. The Optical Constants of Tin below the Superconducting Transition Temperature 386
Dr. D. TER HAAR and Mr. A. W. ROSS. Volume Changes in a Substitutional Alloy 388
Letters to the Editor:
Dr. P. J. GRANT. The Coupling of Angular Momenta in the Reaction $^{27}Al(p, \gamma)^{28}Si$ 392
Mr. W. R. HINDMARSH. Spectroscopic Isotope Shifts and Electron Scattering by Nuclei 393
Corrigendum (BRODIE) 394
Reviews of Books 395
Contents of Section B 396

Part 5. *May* 1954.

The late Dr. W. D. BRODIE. Lens Spectrometer Study of the Disintegration of ^{233}Pa 397
Prof. S. DEVONS and Dr. G. GOLDRING. Emission of Electron–Positron Pairs from Light Nuclei: II—γ-Transitions in ^8Be, ^{10}B and ^{16}O 413
Dr. P. R. J. BURCH. Cosmic Radiation: Ionization Intensity and Specific Ionization in Air at Sea Level 421
Dr. P. R. J. BURCH. Statistical Errors at Background Intensities in Integrating Ionization Chambers 431
Dr. S. E. HUNT, Mr. W. M. JONES, Mr. J. L. W. CHURCHILL and Mr. D. A. HANCOCK. The Determination of the Resonant Energies for Proton Capture by ^{24}Mg and ^{25}Mg below 550 kev, and Measurement of the Half Lives of ^{25}Al and ^{26}Al 443
Dr. F. M. KELLY, Dr. H. KUHN and Lady ANNE PERY. Hyperfine Structures in the Atomic Spectrum of Calcium 450
Dr. B. L. MOISEIWITSCH and Dr. A. L. STEWART. Approximate Molecular Orbitals: II—The $2p\pi_u$ and $3d\pi_g$ States of H_2^+ 457
Research Notes:
Dr. N. H. MARCH and Dr. B. DONOVAN. Free Electron Diamagnetism and Susceptibilities of the Alkali Metals 464
Mr. G. C. REID. Energy Levels in ^{10}B and ^8Be 466
Prof. E. W. TITTERTON and Mr. T. A. BRINKLEY. Cross Sections for the Reaction $^7Li(\gamma p)^6He$ at 17·6 and 14·8 MEV and the First Excited State of ^6He 469

PAGE

Mr. G. R. Satchler. Some Remarks on Radiative Capture and Stripping Reactions 471
Dr. A. G. Gaydon and Mr. A. R. Fairbairn. Pressure Broadening in the Spectrum of NO and its Photodissociation 474
Dr. L. F. H. Bovey and Mr. W. R. S. Garton. The Absorption Spectrum of Thulium 476
Letters to the Editor:
Mr. W. R. Hindmarsh, Dr. H. Kuhn and Mr. S. A. Ramsden. Isotope Shifts in the Atomic Spectra of Tin and Cadmium 478
Dr. S. E. Hunt, Mr. W. M. Jones and Mr. J. L. W. Churchill. Measurement of the End Point Energy of Positrons from ^{25}Al 479
Mr. I. S. Hughes and Dr. P. J. Grant. Polarization of the 10·4 MeV Gamma-Ray in the Reaction ^{27}Al(p,γ)^{28}Si 481
Reviews of Books 482
Contents of Section B 484

Part 6. *June* 1954.

Mr. H. E. Hall. The Inertia of Heat Flow in Liquid Helium II 485
Mr. H. N. V. Temperley. A Possible Model of Liquid He_3 495
Dr. G. C. Fletcher. Calculations of the First Ferromagnetic Anisotropy Coefficient, Gyromagnetic Ratio and Spectroscopic Splitting Factor for Nickel . 505
Dr. G. L. Squires. A Nuclear Method for the Estimation of Traces of Light Water in Heavy Water 520
Dr. A. H. Cooke and Dr. H. J. Duffus. The Magnetic Susceptibility of Nitric Oxide in a Clathrate Compound 525
Dr. R. F. Barrow, Mr. J. A. T. Jacquest and Mr. E. W. Thompson. The Ultra-Violet Emission Spectra of the Gaseous Monofluorides of Gallium and Indium 528
Prof. D. R. Bates, Mr. R. T. S. Darling, Mr. S. C. Hawe and Dr. A. L. Stewart. Properties of the Hydrogen Molecular Ion: IV—Oscillator Strengths of the Transitions Connecting the Lowest Even and Lowest Odd σ-States with Higher σ-States 533
Dr. J. R. Prescott. The Decay of ^{207}Bi and the Energy Levels of ^{207}Pb . . 540
Research Notes:
Dr. M. Blackman and Mr. I. A. Khan. The Intensity of High Angle Kikuchi Bands 553
Prof. W. E. Burcham. The α-Activity Induced in Gold by Bombardment with Nitrogen Ions 555
Mr. D. A. Tidman. The Anomalous Scattering of μ Mesons 559
Letters to the Editor:
Miss D. G. Bell, Miss R. Hensman, Dr. D. P. Jenkins and Dr. L. Pincherle. A Note on the Band Structure of Silicon 562
Dr. W. M. Fairbairn. The Deuteron Bombardment of Oxygen . . . 564
Reviews of Books 566
Contents of Section B 568

Part 7. *July* 1954.

Dr. D. H. Parkinson and Mr. J. E. Quarrington. The Molar Heats of Lead Sulphide, Selenide and Telluride in the Temperature Range 20°K to 260°K . 569
Mr. L. S. Kothari. Riesz Potential and the Elimination of Divergences from Meson Theory 580
Miss J. M. B. Lang and Dr. K. J. Le Couteur. Statistics of Nuclear Levels . 586
Mr. K. Ilakovac. Resonant Scattering of Gamma-Rays in ^{63}Cu and ^{56}Fe . . 601
Prof. C. A. Coulson. Note on the Applicability of the Free-Electron Network Model to Metals 608
Dr. J. H. Tait. Two-Group Perturbation Theory in Neutron Transport Theory . 615

PAGE

Dr. A. R. Bodmer. Spectroscopic Isotope Shift and Nuclear Deformations . 622
Dr. J. Clunie. On Bose–Einstein Functions 632
Research Notes :
Dr. J. C. Barton. Note on the Positive Temperature Coefficient of the Cosmic Radiation 637
Dr. R. P. Rastogi and Mr. R. C. Srivastava. Non-Equilibrium Thermodynamics of Thermal Transpiration of a Dissociating Gas . . . 639
Dr. G. A. Erskine. The Effect of Contaminating Gases on the Energy per Ion Pair in Helium 640
Dr. M. P. Gupta. The Principal Magnetic Susceptibilities of the Maleic Acid Molecule HOOC · HC : CH · COOH 643
Mr. B. Hird and Mr. C. Whitehead. A Modified Scintillation Pair Spectrometer 644
Letters to the Editor :
Mr. F. R. Barclay, Dr. W. Galbraith, Mrs. K. M. Glover, Mr. G. R. Hall and Mr. W. J. Whitehouse. The Spontaneous Fission Rate of ^{240}Pu . 646
Dr. D. M. S. Bagguley and Dr. N. J. Harrick. The Temperature Dependence of Ferromagnetic Resonance in Colloidal Nickel 648
Reviews of Books 650
Contents of Section B 656

Part 8. *August* 1954.

Miss M. H. Alston, Dr. A. V. Crewe, Dr. W. H. Evans, Dr. L. L. Green and Dr. J. C. Willmott. The Scattering of 15·7 mev Neutrons by ^{4}He . . 657
Prof. D. R. Bates and Major G. W. Griffing. Inelastic Collisions between Heavy Particles : II—Contributions of Double-Transitions to the Cross Sections associated with the Excitation of Hydrogen Atoms in Fast Encounters with other Hydrogen Atoms 663
Mr. K. Phillips. On the Thick Target Bremsstrahlung Spectrum at Relativistic Energies 669
Mr. W. Rothenstein. The Second Born Approximation in Inelastic Collisions of Electrons with Atoms 673
Mr. N. T. S. Evans and Dr. W. C. Parkinson. Angular Distributions in the ^{10}B(d, p)^{11}B Reaction 684
Prof. H. S. W. Massey and Prof. C. B. O. Mohr. Gaseous Reactions involving Positronium 695
Mr. K. M. Howell. The van der Waals Energy of Two Helium Atoms . . 705
Prof. C. B. O. Mohr and Mr. L. J. Tassie. The Scattering and Polarization of Electrons by Gold. 711
Mr. I. E. McCarthy and Prof. H. S. Green. A Method for the Solution of Nuclear Bound-State Problems 719
Letters to the Editor :
Dr. N. L. Balazs. On the Propagation of Energy in Elastic Media . . 726
Mr. W. R. G. Kemp, Dr. P. G. Klemens, Mr. A. K. Sreedhar and Dr. G. K. White. The Lattice Thermal Conductivity of Silver–Palladium Alloys at Low Temperatures. 728
Prof. C. B. O. Mohr. The Difference in the Multiple Scattering of Electrons and Positrons 730
Prof. W. E. Burcham. The α-Activity induced in Gold by Bombardment with Ions of Carbon 13 733
Dr. G. S. Bogle and Mr. V. Heine. Paramagnetic Resonance in Gadolinium Sulphate Octohydrate 734
Reviews of Books 737
Contents of Section B 740

Part 9. *September* 1954.

PAGE

Dr. Ernest Bauer and Dr. Ta-You Wu. The Cooling of a Gas by Radiation . 741
Dr. P. J. Grant, Dr. F. C. Flack, Dr. J. G. Rutherglen and Mr. W. M. Deuchars. Gamma Radiation from the Reaction $^{11}B(p, \gamma)^{12}C$ . . . 751
Mr. D. M. Brink. Short Range Forces and Nuclear Energy Levels in the Neighbourhood of ^{208}Pb 757
Dr. K. M. Gatha, Mr. G. Z. Shah and Mr. N. J. Patel. Approximate Nuclear Density Distributions in Light Elements 773
Dr. M. E. Pillow. Intensity Distribution among Nitrogen Bands in the Auroral Spectrum 780
Mr. W. G. Henry. The Self-Consistent Field for Au^+ 789
Prof. M. J. S. Dewar and Prof. H. C. Longuet-Higgins. The Electronic Spectra of Aromatic Molecules: I—Benzenoid Hydrocarbons . . . 795
Prof. D. R. Bates and Dr. B. L. Moiseiwitsch. Inelastic Heavy Particle Collisions Involving the Crossing of Potential Energy Curves: I—Charge transfer from H atoms to Be^{2+}, Si^{2+} and Mg^{2+} ions 805
Mr. J. Yoccoz. Coulomb Effects in Stripping Reactions 813
Mr. C. R. Stanley. A New Method for the Production of Active Nitrogen and its Application to the Study of Collision Effects in the Nitrogen Molecular Spectrum 821
Dr. M. J. Buckingham and Dr. M. R. Schafroth. The Specific Heat of Metals at Low Temperatures 828
Dr. H. M. Rosenberg. The Thermal Conductivity of Germanium and Silicon at Low Temperatures 837
Mr. A. Ward. The Emission of Light in the Passage of Alpha Particles through Gases 841
Research Notes:
Dr. M. E. Pillow. Intensities in Band Systems of O_2: $^3\Sigma_u^+$–$^1\Sigma_g^+$ (Broida–Gaydon System) and $^1\Sigma_g^+$–$^3\Sigma_g^-$ (Atmospheric System) . . 847
Mr. P. C. Price. The Yield Curve of the $^7Li(p, \gamma)^8Be$ Reaction . . 849
Contents of Section B 852

Part 10. *October* 1954.

Prof. A. Kastler. Les Méthodes Optiques d'Orientation Atomique et leurs Applications (Holweck Lecture) 853
Mr. W. R. S. Garton. Investigations of Atomic and Molecular Absorption Spectra: III—Ultra-Violet Absorption Spectra of Indium Vapour . . 864
Dr. A. A. Ware. Galvomagnetic and Thermomagnetic Effects in a Plasma . 869
Dr. J. C. Knight, Dr. T. H. Braid and Dr. H. O. W. Richardson. The Beta Rays of Thallium 204 881
Dr. R. J. Blin-Stoyle and Mr. M. A. Perks. The Deviations of Nuclear Magnetic Moments from the Schmidt Lines 885
Prof. E. A. Owen and Dr. G. I. Williams. X-Ray Measurements on Lithium at Low Temperatures 895
Mr. H. N. V. Temperley. On Feynman's Theory of Liquid Helium . . 901
Mr. T. R. Carson. The Vibrational and Rotational Excitation of Molecular Hydrogen by Electron Impact 909
Dr. A. L. Stewart. The Photo-Ionization Cross Section of Lithium . . 917
Dr. E. W. T. Richards. Radiations from Water under Alpha-Particle Bombardment 922
Dr. M. J. Seaton. The Photo-Ionization of Neon 927
Dr. G. Goldring. Emission of Electron–Positron Pairs from Light Nuclei: III—γ-Transitions in the Reaction $^{15}N(p, \gamma)^{16}O$ 930
Dr. C. B. Sharma. The Absorption Spectrum of Bismuth Selenide and Bismuth Telluride in the Region 2900–2200 Å 935

PAGE

Research Notes :
Dr. P. A. Fraser. Vibrational Transition Probabilities of Diatomic Molecules : III 939
Dr. P. J. Campion and Dr. W. T. Davies. The Detection of Electron Pairs in a Cloud Chamber with Internal Counters 941
Dr. P. J. Campion and Dr. W. T. Davies. The Resolving Time of an Internal Counter Controlled Wilson Chamber 944
Mr. M. M. Winn. The Reaction ^{9}Be(d, ^{3}He)^{8}Li 946
Letters to the Editor :
Mr. M. M. Winn. Short-Lived Alpha Emitters produced by ^{3}He and Heavy Ion Bombardments 949
Dr. Vachaspati and Mr. S. M. Shah. Consistency of Nuclear Radii from Electron Scattering and Coulomb Energy Data 950
Reviews of Books 952
Contents of Section B 956

Part 11. *November* 1954.

Dr. S. Hochberg, Prof. H. S. W. Massey and Mr. L. H. Underhill. The Scattering of Nucleons by Alpha Particles—the s-Phases 957
Dr. B. Davison and Mrs. M. E. Mandl. On the Neutron Spectrum for $v^{-\alpha}$ Absorption Cross Section 967
Dr. F. C. Flack, Dr. J. G. Rutherglen and Dr. P. J. Grant. Radiations from the Proton Bombardment of ^{23}Na 973
Mr. I. P. Grant. Theory of (d, p) and (d, n) Reactions : I—General Theory Ignoring Coulomb Effects 981
Dr. W. M. Fairbairn. The D–D Reaction 990
Dr. F. J. M. Farley and Mr. J. R. Storey. The Sidereal Correlation of Extensive Air Showers 996
Dr. G. N. Fowler. Note on the Relation between certain Forbidden Beta Transitions and the Nuclear Spin Orbit Interaction 1005
Dr. A. Dalgarno. Inelastic Heavy-Particle Collisions Involving the Crossing of Potential Energy Curves : II—Charge Transfer from H-atoms to Al^{3+}, B^{2+}, Li^{2+} and Al^{2+} 1010
Research Notes :
Dr. R. H. Tredgold. On Antiferromagnetism in Metals 1018
Mr. L. S. Kothari. Riesz Potential and the Elimination of Divergences from Quantum Electrodynamics : III 1021
Dr. G. D. Adam and Dr. K. J. Standley. Ferromagnetic Properties of Oxidized Mn_2Sb 1022
Letters to the Editor :
Mr. G. R. Satchler. Radiative Transitions in *j–j* Coupling 1024
Mr. J. G. Dardis and Prof. C. B. A. McCusker. A Possible Variation of the Rate of Local Penetrating Showers 1026
Reviews of Books 1028
Contents of Section B 1036

Part 12. *December* 1954.

Mr. V. C. Officer and Mr. P. J. Eccles. The Time Coherence of Associated Cosmic Ray Particles 1037
Mr. H. R. Lemmer and Dr. M. A. Grace. The Angular Correlation of Successive γ-Rays in ^{60}Ni at Low Temperatures 1051
Mr. J. Hubbard. Plasma Oscillations in a Periodic Potential : The One-Zone Theory 1058

PAGE

Dr. B. L. Moiseiwitsch and Dr. A. L. Stewart. Inelastic Collisions between Heavy Particles: III—Excitation of Helium Atoms in Fast Encounters with Hydrogen Atoms, Protons and Positive Helium Ions 1069

Dr. B. H. Bransden, Dr. A. Dalgarno and Mr. N. M. King. Electron Capture: IV—Capture from Helium Atoms by Fast Protons 1075

Dr. P. Swan. The Elastic Scattering of Electrons by the Excited 2s and 2p States of Atomic Hydrogen 1086

Dr. P. J. Campion. A Cloud Chamber Study of some Aspects of the Geiger Discharge 1095

Research Notes:

Dr. R. Huby. Phase of Matrix Elements in Nuclear Reactions and Radioactive Decay 1103

Mr. D. St. P. Bunbury. An Investigation of the (γ, n) Reaction in Cu, Zn and Ag 1106

Dr. G. W. Greenlees. Levels of ^{24}Mg from the ^{27}Al(p, α)^{24}Mg Reaction . 1107

Dr. E. Breitenberger. On Source Scattering in Angular Correlation Experiments with Soft Electrons 1108

Letters to the Editor:

Prof. M. H. L. Pryce. Nuclear Shell Structure 1111

Dr. K. M. Gatha, Mr. N. J. Patel and Mr. P. F. Patel. The Elastic Scattering of 125 Mev Electrons by Beryllium 1111

Mr. P. Marin, Mr. G. R. Bishop and Dr. H. Halban. The Absolute Standardization of the 2·615 Mev γ-rays of ThC″ and the Cross Section for the Photo Disintegration of the Deuteron at this energy 1113

Reviews of Books 1114

Obituary Notices:

Herbert Stanley Allen 1117

Alfred Blackie 1118

Albert Campbell 1119

Francis Cecil Chalklin 1122

Reginald Stanley Clay 1124

Frank Kenneth Goward 1126

Frank Lloyd Hopwood 1127

John Edward Lennard-Jones 1128

Robert Stewart Whipple 1129

Maurice Edmond Joseph Gheury de Bray 1131

Fred Harrison 1131

Contents of Section B 1132

Subject Index, Section A, Vol. **67** 1133

Index of Authors (with Titles), Section A, Vol. **67** 1141

Index to Reviews of Books, Section A, Vol. **67** 1151

PROCEEDINGS AT THE MEETINGS OF THE PHYSICAL SOCIETY

SESSION 1953–54

16th September 1953

The seventy-fourth meeting of THE COLOUR GROUP, in the Physics Department, Imperial College, Imperial Institute Road, London S.W.7. Dr. L. C. Thomson was in the Chair.

The following paper was read : Some aspects of white, grey and black, by Mr. Ralph M. Evans.

1st October 1953

The sixty-first meeting of THE OPTICAL GROUP, in the Physics Department, Imperial College, Imperial Institute Road, London S.W.7. Mr. J. Guild was in the Chair.

The following papers, the second with a demonstration, were read : Aberration balancing in anastigmats, by Dr. E. H. Linfoot, and Scatter fringes of equal thickness, by Dr. J. M. Burch.

8th October 1953

The forty-fifth meeting of THE LOW TEMPERATURE GROUP, in the Lecture Theatre of the Science Museum, Exhibition Road, London S.W.7. Professor D. M. Newitt was in the Chair.

The meeting took the form of a symposium on superconductivity and the following papers were read : The experimental study of superconductivity at Cambridge, by Dr. A. B. Pippard; Hard superconductors—tantalum, niobium, vanadium, by Mr. H. Teague; The heat conductivity of superconductors, by Mr. C. A. Renton; Superconductivity at high pressures, by Professor G. O. Jones.

16th October 1953

The fifty-third meeting of THE ACOUSTICS GROUP, in the Lecture Theatre of the Science Museum, Exhibition Road, London S.W.7. Mr. L. C. Pocock was in the Chair.

The following lecture was given and discussed : Stress waves in solids, by Dr. H. Kolsky.

23rd October 1953

Science Meeting, in the Lecture Theatre of the Science Museum, Exhibition Road, London S.W.7. Professor L. F. Bates was in the Chair.

The seventh (1953) Charles Chree Medal and Prize was presented to Professor J. Bartels (Göttingen University) who afterwards delivered his address entitled : Chree's influence on present-day geophysics.

4th November 1953

The seventy-fifth meeting of THE COLOUR GROUP, in the Lecture Theatre of the Institute of Ophthalmology, Judd Street, London W.C.1. Dr. L. C. Thomson was in the Chair.

The following papers were read and discussed : Chemical and nervous factors in scotopic dark adaptation, by Dr. W. A. H. Rushton; Some properties of the cat's eye, by Dr. R. A. Weale.

12*th November* 1953

The sixty-second meeting of THE OPTICAL GROUP, in the Lecture Room of the Institute of Ophthalmology, Judd Street, London W.C.1. Dr. H. H. Hopkins was in the Chair.

The following paper was read and discussed: The latent period of vision and the Pulfrich effect, by Dr. G. B. Arden and Dr. R. A. Weale.

A discussion on Binocular Vision was opened by Professor W. D. Wright, and followed by Mr. R. J. Spottiswoode and Dr. D. Gabor.

12*th November* 1953

The fifty-fourth meeting of THE ACOUSTICS GROUP, in the Small Lecture Theatre of Imperial College, Imperial Institute Road, London S.W.7. Mr. L. C. Pocock was in the Chair.

The following lecture was given and discussed: Recent work on cavitation, by Dr. B. Noltingk.

17*th November* 1953

The forty-sixth meeting of THE LOW TEMPERATURE GROUP, in conjunction with the Institute of Physics, in the small Lecture Theatre of the Institution of Mechanical Engineers, Storey's Gate, London S.W.1. Mr. A. G. Clausen was in the Chair.

The following papers were read and discussed: Some considerations relating to the design of freeze-drying plant, by Dr. R. A. Kekwick; A study of the factors governing the rate of freeze drying of blood plasma, by Dr. R. F. Strickland-Constable.

A demonstration of some freeze drying equipment was arranged by Messrs. W. Edwards & Co. in the vestibule after the meeting.

20*th November* 1953

Science Meeting, in the Lecture Theatre of the Science Museum, Exhibition Road, London S.W.7. The President, Professor R. Whiddington, was in the Chair.

It was announced that Council had elected the following to Student Membership: Percival Davis McCormack, John Michael Radcliffe, Michael Arthur Short.

The following were elected to Fellowship: Julian Eisenstein, Walter Lawrence, Patrick Herbert Lee, Hideo Takaki, John Michael Ziman.

The thirtieth (1953) Duddell Medal was presented to Professor W. Sucksmith (Sheffield University), who afterwards gave an account of his work entitled: Some magnetic measurements techniques and applications.

The ninth (1953) Charles Vernon Boys Prize was presented to Professor F. C. Williams (Manchester University), who afterwards gave an account of his work entitled: Cathode-ray tube storage for digital computers.

8*th December* 1953

The fifty-fifth meeting of THE ACOUSTICS GROUP, in the Lecture Theatre of the Science Museum, London S.W.7. Mr. L. C. Pocock was in the Chair.

The following lecture was given: The theory of hearing, by Professor R. J. Pumphrey. This was followed by a discussion which was opened by Mr. I. A. Tumarkin.

9th December 1953

The seventy-sixth meeting of THE COLOUR GROUP, in the Tea Room of the Institution of Electrical Engineers, Savoy Place, London W.C.2. Mr. J. G. Holmes was in the Chair.

The meeting took the form of a symposium on: The colour rendering properties of fluorescent lamps, and the following papers were read and discussed: Binocular viewing investigations, by Miss B. M. Young and Mr. G. T. Winch; A critical review of colour-rendering problems, by Dr. S. T. Henderson and Mr. D. T. Waigh; A logical method of investigating colour rendering, by Dr. B. H. Crawford.

10th December 1953

The eighth Annual General Meeting of THE LOW TEMPERATURE GROUP, in the Lecture Theatre of the Science Museum, London S.W.7. Mr. C. M. Brain was in the Chair.

Minutes of the seventh Annual General Meeting were read and confirmed.

The Report of the Committee for 1952–1953 was presented.

The Officers and Committee for 1953–54 were elected.

A vote of thanks was accorded to retiring Committee Members.

10th December 1953

The forty-seventh meeting of THE LOW TEMPERATURE GROUP, in the Lecture Theatre of the Science Museum, London S.W.7. Mr. C. M. Brain was in the Chair.

The following paper was read: The performance and operation of low temperature rectifying columns, by Mr. A. G. Mackie.

10th December 1953

The sixty-third meeting of THE OPTICAL GROUP, in the Physics Department, Imperial College, Imperial Institute Road, London S.W.7. Mr. J. Guild was in the Chair.

The following papers were read: Some problems in making mirrors for large astronomical telescopes, by Mr. G. E. Manville; The working of small, hyperhemispherical lenses, by Mr. M. G. L. Curties; Making optical components of crystalline quartz and synthetic crystalline materials, by Mr. H. W. Yates.

The following film was shown: Grinding a 98-inch telescope mirror.

5th January 1954

The fifty-sixth meeting of THE ACOUSTICS GROUP, at the Trinity College of Music, 11 Mandeville Place, London W.1. Mr. L. C. Pocock was in the Chair.

The following paper was read and discussed: Cathedral acoustics, by Mr. Hope Bagenal.

6th January 1954

The seventy-seventh meeting of THE COLOUR GROUP, at the Royal Photographic Society, 16 Princes Gate, London S.W.7. Dr. L. C. Thomson was in the Chair.

The following papers were read and discussed: Modern theories of the colour of organic molecules, by Dr. W. C. Price; The use of coloured couplers to overcome unwanted absorptions in colour photography, by Dr. R. W. G. Hunt.

26*th January* 1954

The forty-eighth meeting of THE LOW TEMPERATURE GROUP, in the Lecture Room of the Institute of Physics, 47 Belgrave Square, London S.W.1. Professor D. M. Newitt was in the Chair.

The following lecture was given: A new method of determining P–V–T relation down to temperatures of −180°C, by Professor A. Michels.

28*th January* 1954

The sixty-fourth meeting of THE OPTICAL GROUP, in the Physics Department, Imperial College, Imperial Institute Road, London S.W.7. Mr. J. Guild was in the Chair.

The following papers were read: The precision measurement of solar wavelengths, by Dr. M. G. Adam; Physical photometry, by Mr. J. S. Preston.

12*th February* 1954

The fifty-seventh meeting of THE ACOUSTICS GROUP, in the Lecture Theatre of the Science Museum, London S.W.7. Mr. L. C. Pocock was in the Chair.

The following lecture was given: A technique of sound recording on glass discs, by Mr. A. J. Forty.

17*th February* 1954

The seventy-eighth meeting of THE COLOUR GROUP, in the Physics Department, Imperial College, Imperial Institute Road, London S.W.7. The Chair was taken by Dr. L. C. Thomson, and later in the meeting by Dr. W. S. Stiles.

The following papers were read and discussed: A study of the appearance of spectral colours and their relationship to Müller's theory of vision, by Dr. L. C. Thomson; Some conservative thoughts on the trichromatic theory, by Professor W. D. Wright.

18*th February* 1954

The fifty-eighth meeting of THE ACOUSTICS GROUP, in cooperation with the Institute of Metals, in the Lecture Hall of the Institute of Metals, 4 Grosvenor Gardens, London S.W.1. Mr. L. C. Pocock was in the Chair.

The following lectures were given and discussed: The temperature anomalies in the elasticity, electrical and thermal conductivities and thermal expansion of dilute chromium alloys, by Mr. H. Pursey and Dr. R. W. Powell; The ductile–brittle transformation of chromium, by Mr. A. Sulley; The preparation of dilute chromium alloy specimens for elasticity investigation, by Mr. J. H. Randall.

18*th February* 1954

The forty-ninth meeting of THE LOW TEMPERATURE GROUP, in the Lecture Theatre of the Science Museum, Exhibition Road, London S.W.7. Dr. F. Din was in the Chair.

A report of the Congress of the International Union of Physics at Houstoun, U.S.A. was given by the following principal speakers: Recent work on superconductivity, by Dr. R. E. Faber; Nuclear magnetism and adiabatic demagnetization, by Dr. N. Kurti; Liquid helium, by Dr. Wilks.

4*th March* 1954

The fifty-ninth meeting of THE ACOUSTICS GROUP, at the Playhouse Theatre, Northumberland Avenue, London W.C.2. Mr. A. T. Pickles was in the Chair.

A lecture entitled " The acoustic technique in broadcasting ", was given by Dr. Alexander and Mr. T. Somerville.

17*th March* 1954

The fiftieth meeting of THE LOW TEMPERATURE GROUP, in the Science Museum, Exhibition Road, London S.W.7. Professor D. W. Newitt was in the Chair.

The following paper was read : Hydrogen liquefaction, by Dr. A. J. Croft.

18*th March* 1954

The thirteenth Annual General Meeting of THE OPTICAL GROUP, in the Physics Department, Imperial College, Imperial Institute Road, London S.W.7. Mr. J. Guild was in the Chair.

The Minutes of the twelfth Annual General Meeting were read and confirmed.

The Report of the Committee for 1953–54 was approved.

The Officers and Committee for 1954–55 were elected.

A vote of thanks was accorded to retiring Committee Members.

18*th March* 1954

The sixty-fifth meeting of THE OPTICAL GROUP, in the Physics Department, Imperial College, Imperial Institute Road, London S.W.7. Mr. J. Guild was in the Chair.

The following papers were read, the second with a demonstration : A new photoelectric optical test bench, by Mr. W. N. Sproson; Recent developments in colour television, by Mr. L. C. Jesty.

24*th March* 1954

The fourteenth Annual General Meeting of THE COLOUR GROUP, at the Institute of Ophthalmology, Judd Street, London W.C.1. Dr. L. C. Thomson was in the Chair.

The Minutes of the thirteenth Annual General Meeting were read and confirmed.

The Report of the Committee for 1953–54 was approved.

The Officers and Committee for 1954–55 were elected.

A vote of thanks was accorded to retiring Committee Members.

24*th March* 1954

The seventy-ninth meeting of THE COLOUR GROUP, at the Institute of Ophthalmology, Judd Street, London W.C.1. Dr. L. C. Thomson was in the Chair.

The following papers were presented : Additivity of colour equations, by Miss P. W. Trezona; The number of kinds of human retinal receptors and the spatial and temporal summation and resolution allowed by their pathways, by Dr. G. S. Brindley.

26*th March* 1954

Science Meeting, in the Lecture Theatre of the Science Museum, Exhibition Road, London S.W.7. The President, Professor R. Whiddington, was in the Chair.

It was announced that Council had elected the following to Student Membership : Michael John Bailey, Robert K. Bell, Dennis Herbert Bowen, Cyril Carter, Roy Victor Coates, David Dickinson, David Norman Edwards, Hanna Sidonie Therese Gottfried,

Donald Gugan, Brian Roy Harris, Robert Hall Haynes, Stanley Hinds, Ronald Kitching, Michael Leon Levin, Elliott Hershel Lieb, Roger Geoffrey Loasby, Walter Charles Marshall, Michael John Millican, Wilson Menzies Nicol, Ian Stuart Norris, John Willingdon Reader, Donald Martin Roycroft, Gilbert Neil Spokes, Michael Richard Wall, Hang Yee.

The following were elected to Fellowship, the first five being transferred from Student Membership :—Adrian Victor Cohen, John Robert Gabriel, Arthur Godfrey Hunt, Geoffrey Wilfred Wilson, Murray M. Winn; Mathur Mohan Das, Joan Margaret Drewitt, Charles Edward Dworjack-Graham, Henry Edward Gunn, Nicolai Herlofson, Sidney Philip Holloway, Ragnar Holm, Erik Vilhelm Hulthén, Victor A. Kuznetsov, Egon E. Loebner, Frank Reginald Nunes Nabarro, Brian Wynne Oakley, Alfred Lauck Parson, Kaza Sreeramamurty, B. N. Srivastava, Kenneth William Harry Stevens, Arthur Francis Turner, June Dorothy Whitcher, Lancelot Law Whyte, Cecil Stanley Yeates.

The Guthrie Lecturer, Sir Geoffrey Taylor, was unable to attend owing to illness; a substitute programme was therefore arranged, and Dr. H. H. Hopkins delivered a lecture entitled : Recent applications of Fourier transforms to optical problems.

29*th March* 1954

The seventh Annual General Meeting of THE ACOUSTICS GROUP, at the Royal Society of Arts, 6 John Adam Street, London W.C.2. Mr. W. West was in the Chair.

The Minutes of the sixth Annual General Meeting were read and confirmed.

The Report of the Committee for 1953–54 was approved.

The Officers and Committee for 1954–55 were elected.

A vote of thanks was accorded to the retiring Committee Members.

29*th March* 1954

The sixtieth Science Meeting of THE ACOUSTICS GROUP, at the Royal Society of Arts, 6 John Adam Street, London W.C.2. Mr. A. T. Pickles was in the Chair.

The following paper was read : Double reeds : a note on their design and methods of making them, by Mr. W. H. Tait.

30*th and* 31*st March and* 1*st April* 1954

Spring Provincial Meeting, in the Physics Department, University College, Dublin. The President, Professor R. Whiddington, was in the Chair. The subject of the meeting was : High energy accelerators and cosmic rays.

The following papers were read and discussed : Accelerators for very high energies—an introductory survey, by T. G. Pickavance; The magnetic field of the Birmingham proton synchrotron, by J. L. Symonds; The injection system of the Birmingham synchrotron, a trajectory plotter for use with magnets of circular symmetry, by C. A. Ramm; Recent experiments with the Brookhaven cosmotron, by J. L. Hughes; Recent experiments on the Harwell cyclotron, by T. C. Randle; High energy accelerators at the Radiation Laboratory, Berkeley, by J. Reginald Richardson; Recent work on heavy mesons, by J. V. Major; Methods of mass estimation in photographic emulsions, by C. O'Ceallaigh; Experiments on the Cerenkov radiation from high energy air showers, by J. V. Jelley and W. Galbraith; The scattering of μ-mesons in lead, by J. McDiarmid; Recent work on heavy mesons and hyperons, by Bristol University; Extensive air showers, by T. E. Cranshaw and W. Galbraith; Local penetrating showers, by J. G. Dardis, P. D. McCormick, C. B. A. McCusker and B. G. Wilson; The Manchester spectrograph and its application to measurements on μ-mesons, by B. G. Owen; Investigation of nuclear energy levels by high resolution neutron spectroscopy, by D. J. Hughes; The negative proton in cosmic radiation, by J. McConnell; Relativistic theory of collisions of particles with angular momentum, by J. L. Synge; Autoionization, by A. Dalgarno; Excitation of the rotational and vibrational levels of molecular hydrogen by electron impact, by T. R. Carson; Collisions

between doubly charged positive ions and neutral atoms, by D. R. Bates and B. L. Moiseiwitsch; Electron collisions in nitrogen, by D. T. Stewart; The spectra of the manganese halides, by W. Hayes and T. E. Nevin; Collisions between positive and negative ions of atomic hydrogen, by D. R. Bates and J. T. Lewis; The Layzer approximation for treating collisions between electrons and atoms, by U. Öpik; Nitrogen atoms and active nitrogen, by D. T. Stewart and K. G. Emeléus; The Liverpool cyclotron, by J. R. Holt.

8th April 1954

A Fellows' Luncheon took place in the Upper Dining Hall, Imperial College Union, Prince Consort Road, London S.W.7. The President, Professor R. Whiddington, was in the Chair.

8th–13th April 1954

The following discourses were delivered during the 38th Physical Society Exhibition of Scientific Instruments and Apparatus at Imperial College, London S.W.7 : Electrical contacts, by Professor F. Llewellyn Jones (*8th April*); An artificial talking device, by Mr. W. Lawrence (*9th April*); The study of surface micro-topography by optical methods, by Professor S. Tolansky (*12th April*).

The Prizes and Certificates awarded in the Craftsmanship and Draughtsmanship Competition were presented on the 8th April by Professor R. Whiddington (President and Chairman of the Exhibition Committee).

12th April 1954

The sixty-first meeting of THE ACOUSTICS GROUP, at the City & Guilds College, Exhibition Road, South Kensington, London S.W.7. Dr. E. C. Cherry was in the Chair.

The meeting took the form of a symposium on analysis, synthesis and recognition of speech, and the following papers were read and discussed : The parameters of speech, by Dr. E. W. Ayers; Measurement of the intelligibility of speech links, by Mr. D. L. Richards and Mr. A. R. Bones; The experimental synthesis of speech from parameters, by Mr. W. Lawrence; The recognition of synthetized speech sounds, by Dr. D. B. Fry; Attention and memory in listening to speech, by Dr. D. E. Broadbent; The classification and coding of signals in the nervous system, by Dr. A. M. Uttley.

15th April 1954

The fifty-first meeting of THE LOW TEMPERATURE GROUP, in the Lecture Theatre of the Science Museum, Exhibition Road, London S.W.7. Professor D. W. Newitt was in the Chair. The subject of the meeting was : Low temperature calorimetry.

The following papers were given : A general survey, by Dr. D. H. Parkinson; Some recent investigations, by Dr. R. W. Hill.

28th April 1954

The sixty-second meeting of THE ACOUSTICS GROUP, in the Physics Department, Imperial College, Imperial Institute Road, London S.W.7. Mr. A. T. Pickles was in the Chair.

The following lecture was given and discussed : Absorption of sound in gases, by Professor H. O. Kneser.

6th May 1954

The sixty-sixth meeting of THE OPTICAL GROUP, in the Physics Department, Imperial College, Imperial Institute Road, London S.W.7. Dr. L. C. Martin was in the Chair.

The following papers were given : A spectrophotometer for estimating ozone in the atmosphere, by Dr. R. H. Kay; Optics at the National Bureau Standards, by Mr. D. P. Feber.

6th–10th May 1954

THE LOW TEMPERATURE GROUP visited Western Germany. The party arrived at Hagen on the 6th May and Oxygen Plants of the Messer Co. were inspected on 7th May. A joint scientific meeting with members of the German Physical Society was held at Göttingen on the 8th and 9th May.

13th May 1954

Science Meeting, in the Lecture Theatre of the Royal Astronomical Society, Burlington House, London W.1. The President, Professor R. Whiddington, was in the Chair.

The 9th (1954) Holweck Medal and Prize was presented to Professor A. Kastler (University of Paris), who afterwards delivered a lecture entitled : Les méthodes optiques d'orientation atomique et leurs applications.

19th May 1954

PHYSICAL SOCIETY and the INSTITUTE OF PHYSICS, Joint Colloquia on Electron Physics, in the Physics Lecture Theatre, University College, Gower Street, London W.C.1. Professor H. S. W. Massey was in the Chair.

The subject of the meeting was Scattering of electrons, and the following papers were given : Electron scattering, by Professor H. S. W. Massey; The refractive index of metals in electron diffraction experiments, by Dr. M. Blackman; Elastic scattering and the resolution limit of the electron microscope, by Mr. M. E. Haine.

25th May 1954

Annual General Meeting, in the Lecture Theatre of the Royal Institution, Albemarle Street, London W.1. The President, Professor R. Whiddington, was in the Chair.

Minutes of the previous Annual General Meeting and Extraordinary General Meeting held on 15th May 1953 were read and confirmed.

The Reports of Council and the Honorary Treasurer and the Accounts and Balance Sheet for 1953 were adopted.

As there were no nominations in excess of the number required under the Articles of Association, no ballot was necessary, and the Officers and Council for 1954–55 were elected.

The auditors, Messrs. Knox, Cropper & Co. were re-elected.

Votes of thanks were accorded to retiring officers and members of Council, to the officers and members of the committees of the Society, and of the Society's specialist groups; to the Rector and governing body of Imperial College, and to the Heads of the various departments who have given hospitality to the Society at the Annual Exhibition; to the Managers of the Royal Institution, the Directors of the Science Museum and of the various universities at which meetings have been held, and to the Royal Commissioners for the Exhibition of 1851.

25*th May* 1954

Science Meeting, in the Lecture Theatre of the Royal Institution, Albemarle Street, London W.1. The President, Professor H. S. W. Massey, was in the Chair.

It was announced that Council had elected the following to Student Membership :— Franklin Albert Baker, David Ewart Evans, John Francis James, Milton Thomas Lilburne, Alan Phillip Marks, Robert Alan Melter, Hugh Montgomery, Maurice Ronald Price, Charles Anthony Renton, Michael Douglas Scott-Scott, Robert George Summersgill, Robert Thomas Taylor.

The following were elected to Fellowship, the first thirty being transferred from Student Membership :—Sean Alan Ahearn, John Edward Allen, Peter James Becque, Douglas Blackwood, Arnold Rudolph Bodmer, Ivor Brodie, Leonard Kenneth Burton, James Gordon Campbell, Walter Scott Carter, Geoffrey Vivian Chester, Ella Valerie Joyce Domleo, Michael Ellis Fisher, Leslie Freedman, Michael Wolf Friedlander, Paul Gangolf Heyda, Peter Ware Higgs, David Hughes, Stephen Charles Hunter, Renallt Hill Jones, Stephen Kaye, Charles Dennis Mee, Edward Anthony Mussett, Patrick Nevill, Dennis Rosen, Peter Ailan Schroeder, Michael Anthony Snelling, Edward B. M. Steers, Jon Pyser Tilt, William Horace Tucker, Peter Albert Walker; Ulrich Wolfgang Arndt, Harold Abraham Bernstein, Basil Brown, Kyle Campbell, Jose S. Dionisio, Helmut Drubba, Cyril Richard Forshaw, John David Gething, Gotthard V. A. Gustafsson, Joseph Hayes Hall, H. Philip Hovnanian, Frederick M. Kelly, J. Wesley Kemp, Norman Robert McCormick, John Richard Millburn, Thomas Edwin Nevin, John Laban Putnam, Eric Walter Ray, Harold Owen Wilson Richardson, Frank Cornelius Roesler, Said Hussein El-Sabeh, John Savage, Beno Schneidmesser, Benjamin E. Sturlesi, Brian Milton Spicer, Eric Dennis Swann, Peter Swinbank, Harry John Teague, Albert George Herbert Troughton, Peter Albert Walker, George Benson Watkins, William Stanley Cossom Williams, Alan Frank Bernard Wood.

The Presidential Address was delivered by Professor R. Whiddington (retiring President). His subject was : Physics in the university and the nation.

26*th May* 1954

The eightieth meeting of THE COLOUR GROUP, at the Institute of Ophthalmology, Judd Street, London W.C.1. Dr. L. C. Thomson was in the Chair.

The following papers were read : Subjective white in colour television, by Mr. W. N. Sproson; Colour preferences in television pictures, by Dr. M. Gilbert.

7*th*, 9*th and* 12*th July* 1954

Summer Meeting, in connection with the General Assembly of the International Union of Pure and Applied Physics, in the Lecture Theatre of the Royal Institution, 21 Albemarle Street, London W.1. The Chair was taken by : The President, Professor H. S. W. Massey, on 7th July; Professor O. R. Frisch, on 9th July; Professor Sir Lawrence Bragg, on 12th July.

The following lectures were given : 7*th July*, Fields and particles, by Professor J. A. Wheeler (Princeton University), 9*th July*, The European organization for nuclear research, by Professor E. Amaldi (Instituto di Fisica, Rome); 12*th July*, Microwave experiments in the physics of solids, by Professor C. Kittel (California University).

9*th and* 10*th July* 1954

The sixty-seventh meeting of THE OPTICAL GROUP, at Reading University, Berkshire. Mr. J. Guild was in the Chair.

The following papers were given : The function of eye movements in the visual process, by Mr. D. H. Fender; The measurement of the absorption coefficients in the vacuum ultra-violet, by Professor R. W. Ditchburn; Absorption measurements on thin films by Dr. O. S. Heavens; Soft x-ray spectroscopy, by Dr. E. W. J. Mitchell.

Abstracts of Special Lectures

7th (1953) Charles Chree Medal. Professor J. Bartels.

Chree's Influence on Present-Day Geophysics

For the analysis of long series of observations Chree has introduced methods which have proved effective in geomagnetism, meteorology and other fields. They are discussed as parts of the morphology of geophysical time-series, and applications are described in studies of solar and lunar influences on geophysical phenomena.

30th (1953) Duddell Medal. Professor W. Sucksmith.

Some Magnetic Measurements Techniques and Applications

In general, measurements of permeability or susceptibility are in effect measurements of magnetic induction or intensity of magnetization respectively. In the first case ballistic methods are usually employed, whilst in the second traction methods predominate. The lecturer believes that for ferromagnetics, particularly in the high fields produced by electromagnets, the techniques involving the measurement of force are superior in both convenience and accuracy and also avoid troublesome sources of error. The ferromagnetic balance can be used for measurements of all temperatures. Extension to low fields is described in the latest form of the apparatus, which now permits of *in situ* determinations of the complete (I, H) curve up to the highest fields. Typical examples of the various applications will be dealt with.

9th (1953) Charles Vernon Boys Prize. Professor F. C. Williams.

Cathode-Ray Tube Storage for Digital Computers

The requirement for digit storage arises in connection with automatic digital computers of the general type envisaged by Babbage in 1828. The requirement is for the provision of storage space which can hold up to, say, half a million binary digits each of which may be either 0 or 1, and all of which may be subject to ordered change as the problem proceeds.

The present research began in the summer of 1946, with the object of devising a store using a cathode-ray tube. The cathode-ray tube spot was to be scanned in a television-type raster and so mark out a number of lines, each line being broken up into a number of ' storage areas '. Each area had to be able to hold an electric charge indicative of either 0 or 1 in the binary system of notation. In the autumn of that year a workable process of ' regeneration ' was discovered. By this process the charge pattern on the screen is ' read ' continuously, digit by digit, at a rate of 100 000 sec^{-1}. As each digit space is ' read ' its state, 0 or 1, is determined and action is taken to reset the space to the state, 0 or 1, that had been detected. In this way leakage effects were nullified and repeated reading of stored information became possible.

Since then many improvements have been made. It is now commonplace to store over 1000 binary digits on a single cathode-ray tube. The state of any one of these digits is determinable on demand with a delay of a few microseconds only. The store has been incorporated in two or three machines in this country and in many more in the United States.

9th (1954) Holweck Medal and Prize. Professor A. Kastler.

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THE PHYSICAL SOCIETY

REPORT OF COUNCIL FOR THE YEAR ENDED 31ST DECEMBER 1953

The membership of the Society, and the sale of its publications, continue to increase both at home and abroad.

The new Articles of Association for the Society, which were under consideration by the Board of Trade a year ago, were approved by them and adopted at an Extraordinary General Meeting on 15th May, 1953 : the new procedure for the election of Officers and Council will be effective for the first time for the elections at the Annual General Meeting in May, 1954.

The separation of payment by Fellows for membership of the Society and for publications, which came into effect on 1st January, 1953, has worked smoothly, and appears to be serving better the needs of Fellows. Interest is steadily growing in the Reprint Service which was introduced at the same time : this was a radical departure from established practice and it is too early to assess its ultimate value.

Under the will of the late Mrs. W. Phillips, widow of the late Major C. E. S. Phillips, a very generous bequest is to fall to the Society ; the precise amount by which the Society will benefit is not yet known.

The Council of the Physical Society wishes to record the cordial thanks of the Society to the various bodies who provided hospitality for the Science Meetings of the Society and its four Groups, and to the Rector and Governing Body of Imperial College and the Heads of the Physics and Chemistry Departments for the privilege of holding the Annual Exhibition in these sections of the College.

MEETINGS

The Annual General Meeting was held at the Imperial College on 15th May, 1953. Reports of the Council and of the Honorary Treasurer and the Annual Accounts for 1952 were adopted.

Professor R. Whiddington C.B.E., M.A., D.Sc., F.R.S. was re-elected President and the Officers and Council for 1953–54 were elected.

Meetings out of London were held at the University of Leeds on 31st March and 1st April, and at the University of Durham, King's College, Newcastle-upon-Tyne, on 13th and 14th July. A Conference (sponsored jointly by the Electrical Research Association, the Institute of Physics and the Physical Society) was held at the Clarendon Laboratory, Oxford, from 18th–23rd July. The subject was " Ionization Phenomena in Discharges ".

Five Science Meetings were held in London during the year. The arrangement for publication of the sessional list of meetings of the Society and its Specialist Groups, and the sessional list of meetings of the Institute of Physics was continued.

A Fellows' Luncheon was held in London on 13th April, the Opening Day of the Annual Exhibition of Scientific Instruments and Apparatus. Many Fellows expressed their appreciation of this opportunity to meet, and it is hoped to establish it as an annual function.

MEMORIAL LECTURES AND AWARDS

The 37th Guthrie Lecture was delivered by Professor Max Born on " The Conceptual Situation in Physics and its Prospects of Development " at the Science Museum on 13th March, 1953.

The 8th Holweck Medal of the Société Française de Physique and the Holweck Prize of the Physical Society were presented to Mr. J. A. Ratcliffe in Paris in May, 1953. The Holweck Discourse delivered by Mr. Ratcliffe was entitled " Diffraction of Radio Waves by the Ionosphere ".

The 7th Charles Chree Medal and Prize was presented to Professor J. Bartels at the Science Museum on 23rd October, 1953. The Charles Chree Address delivered by Professor Bartels was entitled " Chree's Influence on Present-Day Geophysics ".

The 30th Duddell Medal was presented to Professor W. Sucksmith, who gave a talk on " Some Magnetic Measurements—Techniques and Applications ", and the 9th Charles Vernon Boys Prize was presented to Professor F. C. Williams, who gave a talk on " Cathode-Ray Tube Storage for Digital Computers ".

The presentations were made at the Science Museum on 20th November, 1953.

EXHIBITION OF SCIENTIFIC INSTRUMENTS AND APPARATUS

The 37th Exhibition was held at Imperial College from 13–17th April, 1953, and was housed in the Physics and Chemistry Departments in the Main Building, and one exhibit in the Mathematics Department in the Huxley Building. The attendance showed an increase over that of the previous year, reaching 20,000 including members and exhibitors. The Society was again greatly indebted to Mr. A. G. Peacock for his invaluable services in his capacity as Honorary Exhibition Secretary.

The Craftsmanship and Draughtsmanship Competition was held in March, and 113 entries were displayed at the Exhibition. By courtesy of the Director of the Science Museum prize-winning entries were displayed for a further period in the Science Museum. The Council records its appreciation of a further donation of £50 by the Scientific Instrument Manufacturers' Association from the Bowen Trust Fund. This was applied to the first prizes in four of the classes in the Competition as in 1952, these prizes being designated 'Bowen Prizes'. A Prize to commemorate the work of the late Professor Silvanus P. Thompson at the City and Guilds of London Institute Technical College was again awarded.

PUBLICATIONS

Proceedings

Once again it is a pleasure to record the indebtedness of the Society to those who have acted as referees for papers submitted for publication in the *Proceedings of the Physical Society*. With their help it has been possible to maintain a high standard of subject matter and presentation. The necessity for their work is seen from the following figures: Of 415 manuscripts (282 Papers, 55 Research Notes, 78 Letters to the Editor) received during the year, 258 were accepted in their original form, 89 were accepted after amendment and 68 were rejected. It is hoped that authors also will continue to help the Society and its referees by giving manuscripts a careful checking before they submit them for publication.

Reports on Progress in Physics

Volume 16 of this series was published in April, 1953. It contained 9 articles in various branches of physics. The *Reports* have been criticized for being sometimes not sufficiently readable by the physicist not a specialist in the particular fields. In an endeavour to correct this, authors are being asked to ensure that the introductory section of any *Report* is fairly broad and elementary in scope.

A comprehensive cumulative subject index for Volumes 1–10 prepared by Mr. M. E. J. Gheury de Bray, and referred to in the 1952 Report of Council, was published during the summer of 1953.

MEMBERSHIP

Roll of Membership		Hon. Fellows	*Ex-officio* Fellows	Fellows	Student Members	Total
Totals, 31st Dec. 1952		9	4	1704	384	2101
Changed during 1953	Newly elected			75	58	
	Re-elected			2 } 128	} 58	
	Transferred			51	51	
	Deceased			9		
	Resigned			78 } 87	19 } 70	
	Lapsed					
	Net increase			41	−12	29
Totals, 31st Dec. 1953		9	4	1745	372	2130

The following is a summary of the membership during the past eight years :

Year	1946	1947	1948	1949	1950	1951	1952	1953
Newly elected Student Members	53	102	126	77	103	117	83	58
Transfers from Student Membership	46	33	39	50	52	69	46	51
Newly elected Fellows	139	126	87	71	65	98	76	77
Net increase in Fellowship	165	137	60	48	21	83	57	41
Net increase in total Membership	160	179	120	39	40	89	76	29
Total Membership at 31st December	1617	1796	1985	2044	1936	2025	2101	2130

GROUPS

Colour Group

The thirteenth Annual General Meeting of the Colour Group was held on Wednesday, 25th March, 1953, in the Physics Department of Imperial College. Dr. L. C. Thomson was elected Chairman, and Mr. R. W. G. Hunt was re-elected Honorary Secretary. A Resolution recommending an increase in the subscription rates was approved, except in the case of overseas members who it was agreed should pay a special reduced subscription.

Seven Science Meetings were held in London during the year. The summer meeting was held on Thursday, 25th June 1953, at the Dyehouse Laboratories of Imperial Chemical Industries Limited, Blackley, Manchester. It is expected that the report of the Sub-Committee on Colour Systems will be completed before the summer of 1954.

Optical Group

The twelfth Annual General Meeting of the Optical Group was held on Thursday, 19th March 1953, in the Physics Department of Imperial College. Mr. J. Guild was elected Chairman, Professor L. C. Martin was re-elected Vice-Chairman, and Mr. K. J. Habell was re-elected Honorary Secretary.

Five Science Meetings were held in London during the year. The summer meeting was held on Friday and Saturday, 26th and 27th June 1953, at St. John's College, Cambridge.

Low Temperature Group

The eighth Annual General Meeting of the Low Temperature Group was held on Thursday, 10th December 1953, at the Science Museum. Professor D. M. Newitt was re-elected Chairman, Mr. C. M. Brain Vice-Chairman, and Dr. F. Din Honorary Secretary.

Five Science Meetings were held in London during the year. The summer meeting was held on Friday, 29th May 1953, at the H. H. Wills Physical Laboratory of the University of Bristol.

ACOUSTICS GROUP

The sixth Annual General Meeting of the Acoustics Group was held on Thursday, 26th March 1953, at the City and Guilds College. Mr. W. West was re-elected Chairman, and Mr. L. C. Pocock was re-elected Vice-Chairman, and Mr. W. A. Allen and Dr. R. W. B. Stephens were re-elected Joint Honorary Secretaries.

Various amendments to the regulations governing the Group were approved.

Nine Science Meetings were held in London during the year.

MEMBERSHIP

The membership of the four Groups on 31st December 1953 was as follows :

	Colour	Optical	Low Temperature	Acoustics
Members of the Physical Society	118	197	75	104
Members of participating bodies	78	41	48	137
Members of firms subscribing for sustaining membership . .	22	75	—	—
Ex-officio members	—	—	—	2
Other members	26	22	24	41
	244	335	147	284

The following is a summary of the membership of the four Groups during the past eight years :

	1946	1947	1948	1949	1950	1951	1952	1953
Colour Group	208	210	223	232	216	219	239	244
Optical Group	381	286	363	356	326	315	336	335
Low Temperature Group .	85	88	90	94	118	124	130	147
Acoustics Group . . .	—	205	265	277	291	260	286	284

OBITUARY

The Council has learned with great regret of the deaths of the following Fellows : Mr. J. J. V. Armstrong, Mr. R. Donaldson, Mr. Theodore Drescher, Sir James Weir French, Dr. S. Gawronski, Dr. W. Hall, Mr. H. F. V. Little (Life Fellow), Mr. W. T. Otway, Dr. L. F. Richardson, Mr. W. H. Towns, Mr. R. S. Whipple (elected 1899, Member of Council 1909/14, Vice-President 1914/16 and 1936/39, Hon. Treasurer 1925/35, President Optical Society 1920/22).

REPRESENTATION ON OTHER BODIES

The Society was represented on various committees as follows :

British Committee for Radiological Units : Sir John Cockcroft, Professor H. T. Flint, Mr. D. W. Fry, Mr. W. G. Marley, Professor E. A. Owen.

British Standards Institution—Acoustics Standards Committee : Mr. A. T. Pickles.

British Standards Institution—Colour Terminology Committee : Mr. J. G. Holmes, Professor W. D. Wright.

British Standards Institution—Committee on Electrical Nomenclature and Symbols : Dr. L. Hartshorn.

British Standards Institution—Committee on Units and Technical Data : Professor H. T. Flint.

British Standards Institution—Sub-Committee on Temperature Measurement : Dr. E. Griffiths.

British Standards Institution—Technical Committee on Optical Instruments : Dr. C. G. Wynne.

British Standards Institution—Technical Committee LGE/2—Nomenclature for Illumination : Mr. J. S. Preston.

British Standards Institution—Technical Committee CHE/50—Test Methods for Powder Properties : Mr. E. J. Pryor.

British Standards Institution—Units and Symbols Standards Committee : Mr. J. H. Awbery.

British Standards Institution—Technical Committee USM/2 Units, Symbols and Abbreviations : Dr. A. C. Stickland.

Chemical Society—Infra-Red Committee : Dr. A. C. Menzies.

Faraday Society—Colloid and Biophysics Committee : Professor J. T. Randall.

Institute of Physics Board : Dr. A. B. Wood, Dr. C. G. Wynne.

Institute of Physics—British Journal of Applied Physics Advisory Committee : Dr. A. G. Gaydon, Dr. H. Kolsky.

Institute of Physics—Journal of Scientific Instruments Advisory Committee : Mr. T. C. Keeley, Dr. C. G. Wynne.

Institution of Electrical Engineers—Joint B.S.I. Committee on Electron Medical and Radio Frequency Industrial Equipment : Dr. R. L. Smith-Rose.

Joint International Committee on Psychrometric Data : Professor P. A. Sheppard.

London Regional Advisory Committee—Applied Physics : Dr. R. W. B. Stephens.

Ministry of Health—Radioactive Substances Advisory Committee : Sir George Thomson.

Ministry of Labour and National Service Committee : The President of the Physical Society.

Royal Astronomical Society—Geophysical Committee : Dr. J. McG. Bruckshaw.

Royal Society British National Committee for Theoretical and Applied Mechanics : Professor O. A. Saunders.

Royal Society Committee on Symbols :, Mr. J. H. Awbery, Professor H. T. Flint.

Royal Society National Committee for Crystallography : Dr. H. Wilman.

Royal Society National Committee for Physics : Professor L. F. Bates, Dr. A. C. G. Menzies, Dr. D. Roaf.

Royal Society National Committee for Scientific Radio : Dr. W. J. G. Beynon, Dr. A. C. B. Lovell.

Royal Society Paul Instrument Fund : Professor R. V. Jones.

Royal Society Scientific Accommodation Committee : The President of the Physical Society.

Science Abstracts Committee of Management : Mr. J. H. Awbery, Dr. A. G. Gaydon, Dr. D. Roaf, Dr. A. C. Stickland.

The Council appreciates the valuable work done by these representatives.

TREASURER'S REPORT ON THE ACCOUNTS OF THE PHYSICAL SOCIETY FOR THE YEAR ENDING 31ST DECEMBER 1953

Income and Expenditure Account

The Income and Expenditure account has a special significance on this occasion since it reflects a year's working of the new system of the finances of the Society which, as was pointed out in last year's report on the accounts, was adopted with some measure of faith. The two main features of the new system are the lowering of the subscription from 3 guineas to 2 guineas, and the obtaining of at least a partial payment for all publications supplied to the Fellowship. Obviously, the first represents an expense to the Society and the second a saving, and it will be seen from the accounts now presented that any loss of income resulting from the lowering of subscriptions has been more than compensated for by the increased income from the sale of the publications of the Society.

Membership Expenditure

The lowering of the basis of subscriptions paid by Fellows has inevitably reduced the subscription income by one-third, but the total of the various items of expenditure relating to membership has risen somewhat markedly during the year. The changes in the methods of keeping records, which have followed the change in the subscription system, have upset considerably the normal office arrangements which previously had run very smoothly. In consequence, during the year considerable extra effort has had to be given to this aspect of the Society's activities and the result of this is reflected in the expenditure on matters relating to membership. Whilst the experience of the last year may mean that some permanent re-organisation will be necessary, there is no reason to suppose that the level of expenditure will remain as high as it has been this year. In spite of this additional office expense, the removal of the Science Abstracts expenditure from this section has made the overall picture more favourable than last year.

Groups Expenditure

The Groups expenditure has fallen markedly during the year as compared with last year and, in consequence, the expense of the Groups to the Society has become smaller. However, as was pointed out last year, the Group's activities are very vital to the welfare of the Society and any financial commitment entailed in their activities is more than offset by the contribution made by the Groups to the well-being of the Society.

Publications

For some years now it has been the practice to estimate the value of the stock of publications held by the Society at the end of any year. Since a proportion of this stock relates to publications of some years ago, any estimate of the value of the stock can only be approximate. It has been agreed with the Accountant that in future the value of the stock shall be taken as the cost-price of the stock relating to the year under review and the previous year, and that no allowance shall be made for the value of stock of greater age. The adoption of this system has meant that apparently the stock held at 1st January, 1953 (calculated on the old system) was of much greater value than the stock which remained at 31st December, 1953 (calculated on the new system). In consequence, the cost of publications appears to be unduly large, and would, in fact, if the stock position were ignored, amount to £18,962 instead of the £21,336 shown in the account. Although some adjustment would have to be made to this figure in respect of the fluctuating value of the stock of publications, yet it is interesting to note that the receipts from the sale of publications (£19,165) have almost the same value as the costs of publication. It does, therefore, appear that the main object of changing the financial system of the Society has been achieved, namely, to rid the Society of an incubus of a yearly loss, unpredictable in size, on the publications of the Society.

As the Fellowship will know, a reprint service has been offered by the Society and, although at the moment it is proving somewhat expensive to the Society, it is felt well worthwhile to give this new activity every chance to establish itself.

Science Abstracts

The new financial system has, of course, affected the position in regard to *Science Abstracts*. During the previous year, the provision of *Science Abstracts* to the Fellowship cost the Society over £2,500 and, during the year under review, this cost has been reduced approximately to £500, although it should be remarked that favourable circumstances have been partially responsible for the abnormally low expense.

Library

In the previous year, far more money was expended on the Library than had been the case for many years, and the fairly high rate of expenditure has continued during the year under review. The Library, now housed in the old and new Council Rooms of the Society, is becoming, both in appearance and in content, more and more worthy of the Society, and further progress should be made in this direction in the immediate future.

Exhibition

Once again the income accruing to the Society as a result of the publication of *The Handbook of Scientific Instruments and Apparatus* has been very considerable and has amounted to nearly £4,000. During the year it has been found possible to increase the reserves of the Society by the purchase of £4,000 worth of Funding Stock, and the equality of these two figures has some significance: in fact, the hopes expressed in writing of the Exhibition last year have been fulfilled, and it may well be that the future pattern of the finances of the Society will see the income derived from the Exhibition used to finance new endeavours rather than in supporting the normal activities of the Society.

Balance Sheet

The total assets of the Society at 31st December, 1953, amount to £36,678. The investments are shown at cost (1939 value) at £16,941; the market value of these at the end of 1953 was estimated to be £15,670. Of the value of these investments £3,765 relates to the Special Fund.

General

During the first year of operation of the new subscriptions and publications policy, the Society's Income and Expenditure account shows a favourable balance of £1,794. This balance has been achieved in spite of a marked depreciation which has been made in the value of the stocks of publications held by the Society. This happy state of affairs has only been made possible by the very loyal acceptance by the Fellowship of the new arrangements which have been made.

A. J. Philpot,
Honorary Treasurer.

6*th April* 1954

INCOME AND EXPENDITURE ACCOUN

Year to 31/12/52	EXPENDITURE	£	£
£			
	To MEMBERSHIP EXPENDITURE:		
	Agenda Papers, Notices and Expenses		
504	of Meetings	740	
58	Honoraria to Special Lecturers ..	26	
53	Audit and Accountancy Fee ..	53	
1,456	Salaries	2,107	
734	Office Expenses	1,113	
425	Postage	543	
3,230			4,582
	„ GROUP EXPENDITURE:		
	Agenda Papers, Notices and Expenses		
233	of Meetings	265	
416	Salaries	230	
160	Office Expenses	121	
73	Postage	79	
882			695
	„ PUBLICATIONS:		
6,800	Stock, 1st January 1953	7,100	
11,467	"Proceedings"	9,469	
2,624	"Reports on Progress in Physics" ..	2,892	
—	Reprints	1,413	
122	Special Publications	337	
—	Bad Debts	5	
2,872	Salaries	2,691	
1,112	Office Expenses	1,421	
770	Postage	734	
25,767		26,062	
7,100	*Less:* Stock 31st December 1953 ..	4,726	
18,667			21,336
	„ SCIENCE ABSTRACTS:		
	Payments re 1953 Budgeted Expendi-		
2,569	ture	1,675	
—	*Less*: Rebate re 1952	329	
2,569			1,346
	„ EXHIBITION:		
4,173	Expenses	4,795	
—	Bad Debts	85	
833	Salaries	734	
319	Office Expenses	388	
108	Postage	99	
5,433			6,101
	„ LIBRARY EXPENDITURE:		
492	Expansion	270	
	Periodicals and Books .. 591		
242	*Less:* Sales thereof .. 344		
		247	
250	Salaries	134	
83	Office Expenses	71	
1,067			722
—	Transfer to Optical Group—Special Fund		115
	„ GRANTS:		
126	Holweck Trust		102
	„ Balance, being excess of Income over Expenditure, carried to Accumulated		
2,573	Fund		1,622
£34,547			£36,621

Note: The stock of publications on 31st December, 1953 has been valued at cost for publications issued during the two years prior to that date: no value has been placed on earlier publications. On the same basis the stock on the 1st January would have been valued at £3,462.

OR THE YEAR ENDED 31ST DECEMBER 1953

Year to 31/12/52	INCOME	£	£
£			
	By MEMBERS' SUBSCRIPTIONS:		
81	Entrance Fees	78	
4,910	Fellows	3,476	
240	Students	113	
5,231			3,667
	,, GROUP SUBSCRIPTIONS:		
36	Colour Group	43	
109	Optical Group	96	
64	Low Temperature Group	50	
114	Acoustics Group	108	
323			297
	,, PUBLICATIONS:		
	"Proceedings":		
193	Volume for preceding year and Sundry Parts	796	
10,435	Volume for current year	11,799	
1,129	Reprints	1,028	
11,757		13,623	
	"Reports on Progress in Physics"		
	Volumes for preceding years 1,406		
3,744	Volume for current year 2,849		
		4,255	
484	Advertisement in "Proceedings" ..	717	
519	Special Publications	570	
16,504			19,165
	,, SCIENCE ABSTRACTS:		
—	Receipts		853
	,, EXHIBITION:		
9,464	Receipts		10,015
	,, GRANTS FROM ROYAL SOCIETY:		
2,000	Publications Grant in respect of 1953	1,750	
500	Additional Library Grant for expansion in respect of 1952	200	
2,500			1,950
	,, GRANTS FROM OTHER BODIES:		
59	London Conference on Optical Instruments		56
435	,, Interest on Investments		571
31	,, Transfer from Life Membership Fund Amounts paid by Fellows now deceased		47
£34,547			£36,621

BALANCE SHEET AS O

1952	LIABILITIES	£	£
£	ACCUMULATED FUND:		
16,606	As on 31st December 1952 (General Fund) ..	19,438	
259	*Add:* Transfer–W. F. Stanley Trust Fund..	—	
2,573	*Add:* Balance of Income and Expenditure Account	1,622	
19,438			21,060
	APPEAL FUND:		
3,390	As on 31st December 1952	4,888	
1,498	*Add:* Further Contributions received and due	469	
4,888			5,357
			26,417
	LIFE COMPOSITIONS:		
2,330	As on 31st December 1952	2,299	
—	*Add:* Subscriptions received during the year	18	
2,330		2,317	
31	*Less:* Transfer to Income and Expenditure Account	47	
2,299			2,270
	SPECIAL FUNDS:		
385	Duddell Memorial Trust Fund	391	
1,940	Charles Chree Medal and Prize Fund	1,871	
889	Charles Vernon Boys Prize Fund	889	
150	Holweck Prize Fund	100	
402	Addenbrooke Bequest	387	
192	Silvanus P. Thompson Memorial Fund ..	193	
3,958			3,831
	SUBSCRIPTIONS IN ADVANCE:		
1,542	Members	1,216	
3,601	Publications	3,304	
5,143			4,520
1,251	SUNDRY CREDITORS		951

(*Signed*) R. WHIDDINGTON. } *Members of Council.*
C. G. WYNNE. }

Note: This Balance Sheet does not include the value of the contents of the Society's Library or the office furniture.

REPORT OF THE AUDITORS TO THE MEMBERS OF THE PHYSICAL SOCIETY

We have obtained all the information and explanations which to the best of our knowledge and belief were necessary for the purposes of our audit. In our opinion proper books of account have been kept by the Society so far as appears from our examination of those books. We have examined the above Balance Sheet and annexed Income and Expenditure Account, which are in agreement with the books of account. In our opinion and to the best of our information and according to the explanations given us the said accounts give the information required by the Companies Act, 1948, in the manner so required, and the Balance Sheet gives a true and fair view of the state of the Society's affairs as at 31st December 1953, and the Income and Expenditure Account gives a true and fair view of the excess of income over expenditure for the year ended on that date.

Spencer House, South Place,
London, E.C. 2.
10th February 1954.

KNOX, CROPPER & CO.,
Chartered Accountants

£36,977		£37,989

ST DECEMBER 1953

1952	ASSETS	£	£
£			
	QUOTED INVESTMENTS:		
	ACCUMULATED FUND:		
1,438	£2,100 2½% Consols	1,438	
1,636	£1,750 3½% War Stock	1,636	
2,725	£2,775 3% Defence Bonds	2,775	
535	£500 4% Funding Stock 1960/90 ..	535	
1,792	£2,468 0s. 4d. 3% British Transport Stock 1977/88	1,792	
1,000	£1,000 3½% Defence Bonds	1,000	
—	£4,425 18s. 6d. 3% Funding Stock 1959/69	4,000	
9,126			13,176
	SPECIAL FUNDS:		
	Duddell Memorial Trust Fund:		
374	£400 3½% War Stock	374	
	Charles Chree Medal and Prize Fund:		
	£784 4% Funding Stock 1960/90 839		
	£1,500 2½% Consols .. 1,027		
1,866		1,866	
	Charles Vernon Boys Prize Fund		
900	£1,132 16s. 10d. 2½% Consols ..	900	
	Holweck Prize Fund:		
150	£100 3% Defence Bonds	100	
	Addenbrooke Bequest:		
337	£384 6s. 7d. 2½% Consols	337	
	Silvanus P. Thompson Memorial Fund:		
	£55 3% Defence Bonds .. 55		
	£133 2s. 4d. 3½% War Stock 133		
188		188	
3,815		3,765	
	CASH AT BANK: Deposit Account Post		
143	Office Savings Bank	66	
3,958			3,831
	(Investments 31st December 1953—Cost or 1939 value £16,941—Market value £16,670.)		
80	DIVIDENDS DUE ON INVESTMENTS ..		102
	INLAND REVENUE—Income Tax Recoverable		151
577			
176	SUBSCRIPTIONS DUE		473
	SUNDRY DEBTORS:		
1,711	Publications etc	6,287	
168	Payments in Advance	91	
1,879			6,378
	STOCKS:		
2,262	Paper at cost	1,795	
7,100	Publications, at cost (see note) ..	4,726	
9,362			6,521
	CASH AT BANK:		
	Deposit Account, Westminster		
5,000	Bank Ltd. 5,000		
	Less Current Account Westminster Bank Ltd. overdrawn 879		
4,607		4,121	
	Deposit Account Post Office Savings		
1,665	Bank	2,152	
	Deposit Account, Trustee Savings		
504	Bank	1,026	
11,776			7,299
43	CASH IN HAND		58
£36,977			£37,989

DETAILS OF SPECIAL FUNDS, 31st DECEMBER 1953

	As at 31/12/52 Capital	As at 31/12/52 Revenue	Investment Income for year	Expenses for year	As at 31/12/53 Capital	As at 31/12/53 Revenue
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Duddell Memorial Trust Fund	374 0 0	10 14 1	14 0 0	7 5 0	374 0 0	17 9 1
Charles Chree Medal and Prize Fund	1,866 10 0	73 19 0	68 17 2	138 10 0	1,866 10 0	4 6 2
Charles Vernon Boys Prize Fund	900 0 0	Def. *10 4 7*	28 6 4	28 16 0	900 0 0	Def. *10 14 3*
Holweck Prize Fund	150 0 0	– – –	7 10 0 *102 2 11	159 12 11	100 0 0	– – –
Addenbrooke Bequest	337 0 0	64 13 0	9 12 0	24 12 6	337 0 0	49 12 6
Silvanus P. Thompson Prize	188 2 4	3 14 10	6 6 2	5 5 0	188 2 4	4 16 0
	£3,815 12 4	£142 16 4	£236 14 7	£364 1 5	£3,765 12 4	£65 9 6

* Grant from Physical Society Accumulated Fund.

TRUST EXPENSES FOR THE YEAR

	£ s. d.	£ s. d.
Duddell Memorial Trust Fund :		
Medal 1952 under provision	4 0	
Medal 1953	6 0 0	
Certificate	1 1 0	
		7 5 0
Charles Chree Medal and Prize Fund :		
Medal	6 0 0	
Prize	131 5 0	
Certificate	1 5 0	
		138 10 0
Charles Vernon Boys Prize Fund :		
Prize	26 5 0	
Certificate	2 11 0	
		28 16 0
Holweck Prize Fund :		
Prize	100 0 0	
Certificate	9 9 0	
Expenses	50 3 11	
		159 12 11
Addenbrooke Bequest :		
Expenses		24 12 6
Silvanus P. Thompson Prize Fund :		
Prize		5 5 0
		£364 1 5

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